



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/989,583

11/20/2001

Stephen Todd

EMC-033PUS

9738

51576

7590

04/16/2008

EMC CORPORATION

c/o DALY, CROWLEY, MOFFORD & DURKEE, LLP

354 ATURNPIKE STREET

SUITE 301A

CANTON, MA 02021-2714

EXAMINER

CHANKONG, DOHM

ART UNIT

PAPER NUMBER

2152

MAIL DATE

DELIVERY MODE

04/16/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

DETAILED ACTION

1> This action is in response to Applicant's amendment, filed 1.17.2008, which was filed in response to the notice to the Applicant regarding the non-compliant amendment, filed on 10.23.2007. Claims 1, 11, 19, 20, and 24-26 are amended. Claims 8-10 are canceled. Claims 1-7, 11-17, 19, 20, and 24-26 are presented for further examination.

2> This is a final rejection.

Response to Arguments

3> Applicant's arguments with respect to claims 1-7, 10-17, 19, 20, and 24-26 have been considered but are moot in view of the new ground(s) of rejection necessitated by Applicant's amendment.

Information Disclosure Statement

4> The IDS filed 10/23/2007 has been considered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2152

5> Claims 1-6, 8-11, 17, 19, 20 and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aziz et al. (U.S. Patent Number 6,779,016), hereinafter referred to as Aziz, in view of Lagueux, Jr. et al, U.S. Patent No. 6,538,669 ["Lagueux"].

6> Aziz disclosed a scalable server farm wherein a control plane operates to control the allocation and monitoring of the storage resources in the system. In an analogous art, Lagueux disclosed a method for managing access to storage system logical units.

7> Concerning claims 1, 19, and 20, Aziz did not explicitly state the use of world-wide names as network addresses that identify equipment used by the customers. However, Lagueux sets forth a similar storage system which does utilize world-wide name (WWN) information. It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the system of Aziz by adding the ability to utilize world-wide names of equipment used by the customers as provided by Lagueux. Here the combination satisfies the need for reducing overhead in accessing disk units while realizing high-speed access to the disk units. See Lagueux, column 17 «lines 25-29». Lagueux also teaches that WWNs are well known as identifiers for storage devices within storage networks. This rationale also applies to those dependent claims utilizing the same combination.

8> Also concerning claims 1, 19, and 20, Aziz did not expressly disclose generating a directory of executable modules and placing each of the executable software modules in the

directory wherein the common interface comprises a set of methods comprising a first method that when called, causes the executable software modules to identify a class of hardware resource with which the executable software module is configured to communicate, and a second method that when called, causes the executable software module to identify an hardware resources within the class that are connected. However, software modules as claimed were well known in the art at the time of Applicant's invention.

Lagueux discloses a similar storage system and providing a common interface to users for monitoring storage devices [column 6 «lines 54-56»]. Specifically, Lagueux discloses generating a directory of executable modules and placing each of the executable software modules in the directory [Figure 4 | column 11 «lines 40-42»] wherein the common interface comprises a set of methods [abstract : set of communication interfaces adapted for connection to respective devices in a pool of storage devices | column 12 «lines 13-21» : different modules for interfacing with different resources] comprising a first method that when called, causes the executable software modules to identify a class of hardware resource with which the executable software module is configured to communicate [column 14 «lines 55-57» | column 15 «lines 4-6» | column 16 «lines 8-11»: each module accessing different "classes" of devices such as partition, cache, or persistent table] and a second method that when called, causes the executable software module to identify any hardware resources within the class that are connected [column 14 «lines 44-55» where the partition module identifies partitioned storage devices | column 14 «line 58» to column 15 «line 4» : cache module identifying cache devices | column 15 «lines 11-25» : persistent table module identifying tables].

It would have been obvious to one of ordinary skill in the art to have modified Aziz's by incorporating a directory of software modules that enable accessing classes of hardware resources and identifying the resources within that class as taught by Lagueux. One would have been motivated to adapt modify Aziz because Lagueux's modules allow a user to configure and access different types of storage devices that are implemented as part of a storage network [see Lagueux, column 2 «lines 10-21»].

9> Concerning claim 6, Aziz did not explicitly state enabling the administrator to select which data storage attributes are to be stored. However, Aziz does give an administrator control of the system via the control plane whereby the administrator can view and manipulate the data storage attributes. In this type of environment, it was well known in the art at the time of the applicant's invention that a user with administrative access may decide which attributes are to be stored and make other such administrative decisions in the operation of the system. Thus, it would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the system of Aziz by adding the ability to enable the administrator to select which data storage attributes are to be stored.

10> Concerning claims 24-26, Aziz did not explicitly state storing the customer information in a table wherein each entry in the table comprises three fields. However, Aziz does teach the usage of and the storage of customer information that includes an indication of an allocated hardware resource, addresses of the equipment associated with the allocated hardware resource, and an indication of the customer associated with the allocated hardware

Art Unit: 2152

resource. See the line citations in the discussion of claim 1 below. Since Aziz teaches the usage and storage of these items, it would have been simply a design choice as to how to store them in the database. In addition, Lagueux also teaches the storage of similar information in various fields of a table. For all these reasons, it would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the system of Aziz by adding the ability to store the customer information in a table wherein each entry in the table comprises three fields.

11> All lines cited below refer to Aziz unless otherwise noted.

12> Thereby, the combination of Aziz and Lagueux discloses:

- <Claims 1, 19, and 20>

A method of managing hardware resources, comprising:

providing executable software modules configured to communicate with the hardware resources (column 4, line 54 through column 5, line 8 and Lagueux, column 11 «lines 40-42»), each executable software module implementing a common interface to allow a monitoring device to be implemented independent of the hardware resources (column 4, line 64 through column 5, line 8 and Lagueux, column 6 «lines 54-58»);

operating the executable software modules to cause the executable software modules to return information to the monitoring device about the hardware resources (column 4, line 54 through column 5, line 8 and Lagueux, column 6 «lines 54-58» and

column 11 «line 43» to column 12 «line 48»), wherein the information includes hardware configuration information associated with the hardware resources (column 13, lines 16-22) and customer information associated with customers of the hardware resources, wherein the customer information includes world-wide names of equipment used by the customers, allocation information indicative of allocations of the hardware resources to the customers and billable event information for use by a billing application to bill the customers and indicative of usage of the hardware resources by the customers (column 16, lines 23-46 and regarding WWNs, Lagueux, column 17 «lines 25-29»);

storing the hardware configuration information and the customer information in a database (column 16, lines 1-15);

generating a directory of executable modules [Figure 4]; and

placing each of the executable software modules in the directory [Figure 4 | column 11 «lines 40-42»],

wherein the common interface comprises a set of methods [abstract : set of communication interfaces adapted for connection to respective devices in a pool of storage devices | column 12 «lines 13-21» : different modules for interfacing with different resources] comprising a first method that when called, causes the executable software modules to identify a class of hardware resource with which the executable software module is configured to communicate [column 14 «lines 55-57» | column 15 «lines 4-6» | column 16 «lines 8-11»: each module accessing different "classes" of devices such as partition, cache, or persistent table] and a second method that when

called, causes the executable software module to identify any hardware resources within the class that are connected [column 14 «lines 44-55» where the partition module identifies partitioned storage devices | column 14 «line 58» to column 15 «line 4» : cache module identifying cache devices | column 15 «lines 11-25» : persistent table module identifying tables].

- <Claim 2>

The method of claim 1, wherein the hardware resources comprise data storage resources (column 4, lines 23-41).

- <Claim 3>

The method of claim 2, wherein the data storage resources reside in a datacenter controlled by a storage service provider (column 4, line 54 through column 5, line 8).

- <Claim 4>

The method of claim 3, furthering comprising presenting the hardware configuration information and the customer information to an administrator of the storage service provider (column 5, lines 3-8).

- <Claim 5>

The method of claim 4, wherein the hardware configuration information comprises data storage resource attributes (column 13, lines 16-22).

- <Claim 6>

The method of claim 5, further comprising enabling the administrator to select, for a given data storage resource, which of the data storage attributes are to be stored in the database (obviousness as discussed above).

- <Claim 11>

The method of claim 10, wherein the methods further comprise a third method that, when called, causes the executable software module to poll the hardware resources identified within the class that are connected (column 13, lines 16-36 and Lagueux, column 6 «lines 54-58» and column 12 «lines 22-33»).

- <Claim 17>

The method of claim 5, further comprising: adding a new data storage resource to the datacenter (column 8, lines 48-65); and placing the new data storage resource in a directory of hardware resources (column 11, lines 12-28).

- <Claims 24, 25, and 26>

The method of claim 1 wherein storing comprises storing the customer information in a table, an entry in the table comprising: a first field indicating an allocated hardware resource; a second field storing the world-wide names of the equipment associated with the allocated hardware resource in the first field; and a third field indicating the customer associated with the allocated hardware resource in the first field (column 16, lines 1-15 and 23-46; obviousness as discussed above; and Lagueux, column 17 «lines 25-29» and column 2 «lines 46-57»).

Art Unit: 2152

Since the combination of Aziz and Lagueux discloses all of the above limitations, claims 1-6, 11, 17, 19, 20 and 24-26 are rejected.

13> Claims 7 and 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aziz in view of Lagueux as applied above, further in view of Nine et al. (U.S. Patent Number 6,560,611), hereinafter referred to as Nine.

14> The combination of Aziz and Lagueux disclosed a scalable server farm wherein a control plane operates to control the allocation and monitoring of the storage resources in the system as well as to manage access to the logical units in the storage system. In an analogous art, Nine disclosed a network monitoring system for monitoring all services and conditions on various networks.

15> Concerning claim 7, although the combination of Aziz and Lagueux did not explicitly state the use of an executable software module with Java, Nine states the use of Java in his system. It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the combination of Aziz and Lagueux by adding the ability to utilize Java as provided by Nine. Here the combination satisfies the need for more efficient network monitoring. See Nine, column 1, lines 47-55.

16> Concerning claims 12 and 13, although the combination of Aziz and Lagueux did not explicitly state the use of XML to provide polling results, Nine states the use of XML in his

Art Unit: 2152

system. It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the combination of Aziz and Lagueux by adding the ability to utilize XML as provided by Nine. Again the combination satisfies the need for more efficient network monitoring. See Nine, column 1, lines 47-55.

17> Concerning claim 14, although the combination of Aziz and Lagueux did not explicitly state returning a list of services to the user, Nine states this feature in his system. It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the combination of Aziz and Lagueux by adding the ability to return a list of services to the user as provided by Nine. Again the combination satisfies the need for more efficient network monitoring. See Nine, column 1, lines 47-55.

18> The above rationale also applies to those dependent claims utilizing the same combination.

19> Thereby, the combination of Aziz, Lagueux, and Nine discloses:

- <Claim 7>

The method of claim 1, wherein the executable software module comprises JAVA classes (Nine, column 9, lines 55-65).

- <Claim 12>

The method of claim 11, wherein results of the polling are provided in XML format (Nine, column 3, lines 37-48).

- <Claim 13>

The method of claim 11, wherein the results of the polling are provided in a format other than XML and the executable software module performing the polling converts the results of the polling to XML format (Nine, column 3, lines 37-48).

Furthermore, it is well known in the art to convert data into an alternate format in a network when needed.

- <Claim 14>

The method of claim 11, wherein the methods further comprise a fourth method that, when called, causes the executable software module to return a list of services and associated parameters (Nine, column 5, line 60 through column 6, line 8).

- <Claim 15>

The method of claim 14, wherein the methods further comprise a fifth method that, when called, causes the executable software module to execute a requested one of the services on a list of services (Nine, column 6, lines 9-20).

- <Claim 16>

The method of claim 15, wherein making a call to the fifth method comprises specifying values of parameters associated with the requested one of the services (Nine, column 6, lines 20-25).

Since the combination of Aziz, Lagueux, and Nine discloses all of the above limitations, claims 7 and 12-16 are rejected.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DOHM CHANKONG whose telephone number is (571)272-3942. The examiner can normally be reached on Monday-Friday [8:30 AM to 4:30 PM].

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bunjob Jaroenchonwanit can be reached on 571.272.3913. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2152

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. C./
Examiner, Art Unit 2152

/Bunjob Jaroenchonwanit/
Supervisory Patent Examiner, Art Unit 2152